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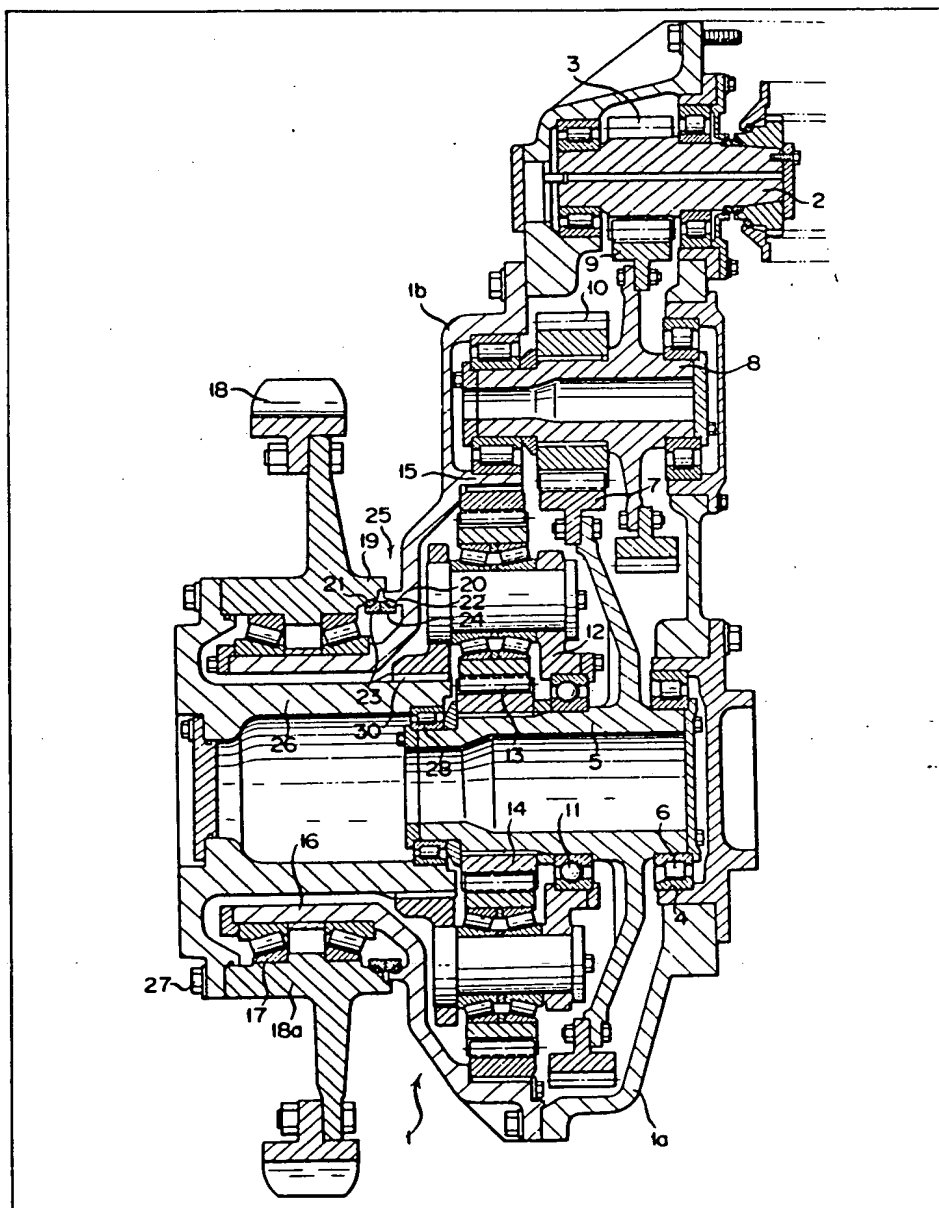
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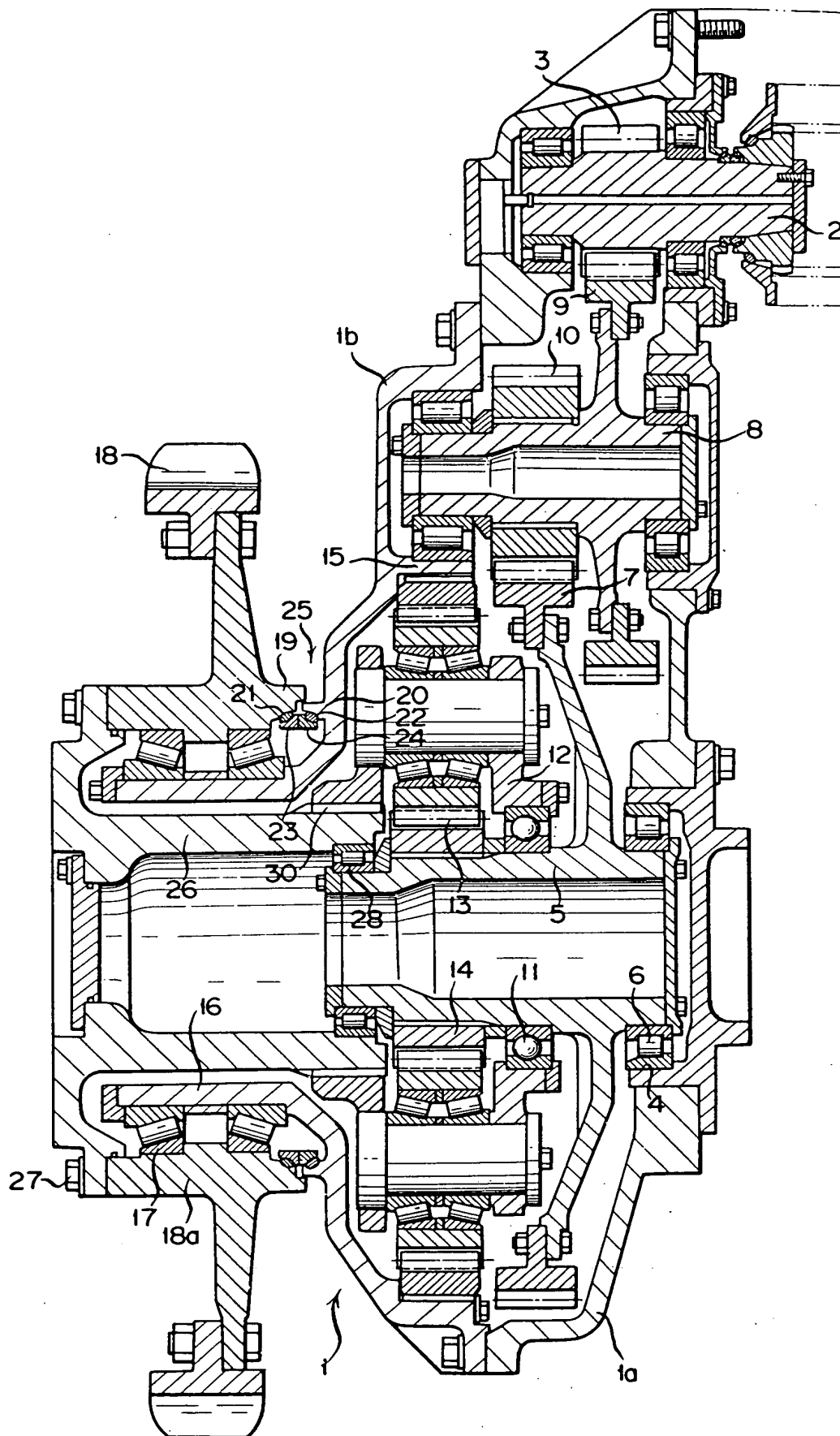
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(54) Endless track final  
drive assemblies

(57) A track drive sprocket 18 is  
rotatably mounted on bearings 17 on  
a housing 1 of a planetary gear set. A  
torque tube 26 is fixed to the sprocket

18 and rotatably mounted on a sun  
gear shaft 5. The torque tube 26 is  
coupled to a carrier 12 of the gear set  
by splines 30 which allow  
circumferential play to avoid uneven  
planet gear load distribution and so  
improve the durability of the gear set.





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## SPECIFICATION

## Final drive assemblies

The invention relates to final drive assemblies suitable for track laying or crawler vehicles comprising a planetary reduction gear set providing output from the gear carrier at the final stage.

Such final drive assemblies as were previously known have the disadvantage that the carrier and track drive sprocket are secured almost rigidly by means of tapered serrations or bolts, so that carrier and sprocket rotate about the same axis. External forces and the tractive force are so large as to deform the housing carrying the sprocket, and when the sprocket axis is deflected for any reason or due to a working error, the housing will be deflected, and normally also the carrier. When the carrier deviates from the axis of the planetary gear set beyond a certain amount, the load distribution on the individual planet gears becomes uneven, and this reduces durability of the gear set.

According to the invention, a torque tube is fixed to the track drive sprocket and rotatably mounted on a sun gear shaft of the gear set, and means is provided for coupling the torque tube with a carrier of the gear set in such a manner as to allow circumferential play. This improves the durability of the planetary gear set.

## 30 Drawing

The accompanying Figure is a longitudinal section of a final drive assembly according to the invention.

A housing 1 comprises an inner casing 1a and an outer casing 1b. Rotatably supported in the inner casing 1a is an input shaft 2 having a gear 3 formed thereon. Rotatably carried by a bearing 6 mounted on a bearing seat 4 of the inner casing 1a is a sun gear shaft 5 provided with a final drive bull gear 7. Rotatably supported by bearing seat portions of the inner casing 1a and the outer casing 1b is an intermediate shaft 8 having gears 9 and 10, the gear 9 meshing with the gear 3 of the input shaft 2 and the gear 10 meshing with the bull gear 7.

Mounted on the sun gear shaft 5 through a ball bearing 11 is a carrier 12 having planet gears 13 rotatably carried thereby. A sun gear 14 is connected to the sun gear shaft 5 by splines formed on both components, and the sun gear 14 meshes with the planet gears 13. The planet gears 13 mesh with a ring gear 15 inside the outer casing 1b. The outer casing 1b has a bearing seat 16 coaxial with the sun gear shaft 5 which has a track drive sprocket 18 mounted thereon through a bearing 17.

Formed on one side of the sprocket 18 is a retainer 19; on the outer casing 1b is a retainer

20, and the retainers 19 and 20 have seal rings 23 and 24, mounted thereon through "O" rings 21 and 22, forming a floating seal 25.

Inside the bearing seat 16 is a torque tube 26 which is coaxial with the sun gear shaft 5. One end of the torque tube 26 is rotatably supported through a bearing 28 by the sun gear shaft 5, and the other end is fixedly secured to the sprocket 18 by means of bolts 27. The torque tube 26 is connected to the aforementioned carrier 12 by the engagement of splines 30 formed thereon.

## 70 Operation

Power is supplied to the input shaft 2 and transmitted through the gears 3, 9, the intermediate shaft 8, the gears 10, 7, the sun gear shaft 5, the sun gear 14, the planet gears 13, and the carrier 12 to the torque tube 26 to rotate the sprocket 18.

When an external force or a tractive force is applied to the sprocket 18, these forces are exerted through the bearing 17 on the bearing set 16 so that the outer casing 1b is subjected to these loads. The outer casing 1b has sufficient strength to endure these external forces, but some deflection is unavoidable.

Although a shaft portion 18a of the sprocket 18 will deviate from its original axis due to the above deflection, such deviation is not directly transmitted to the carrier 12 by the action of the splines 30 formed in the coupling portions of the torque tube 26 and the carrier 12. Because of the floating connection of the carrier 12 to the shaft portion 18a of the sprocket 18, the carrier 12 is movable axially, but such axial movement is restricted by the ball bearing 11 disposed between the carrier 12 and the sun gear shaft 5. Thus, there is no deviation in the planetary gear set, and no uneven load distribution is generated on individual planet gears. Thus the durability of the planetary gear set is good.

## CLAIMS

1. A final drive assembly suitable for a track-laying vehicle comprising a planetary reduction gear set, a housing for the said gear set, a track drive sprocket rotatably mounted on the housing, a torque tube fixed to the sprocket rotatably mounted on a sun gear shaft of the gear set, and means coupling the torque tube with a carrier of the gear set in such a manner as to allow circumferential play.

2. A final drive assembly according to claim 1 in which the coupling means comprises splines formed on an inner face of the carrier and an outer face of the torque tube.

3. A final drive assembly according to claim 1 or claim 2 comprising an intermediate gear shaft having first and second intermediate gears

mounted thereon, the first intermediate gear being in mesh with an input pinion gear and the second intermediate gear being in mesh with said final

drive or bull gear of the planetary gear set.

5 4. A final drive assembly as herein described with reference to the drawing.

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